NOTE Some protocols on the Digi One IAP product family that are described in this document are being moved to legacy status because the protocols described are no longer actively supported. The products themselves continue to be active products.

Setting up Digi One IAP
with two DFI devices
for RSLinx 2.41

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90000640

Contents

1   Introduction

Abstract

This application note explains how to set up two DF1 devices on the Digi One IAP and overcome the RSLinx limitation of supporting only one device per IP on non-Rockwell products. The two devices could be two PLC (that is, two slaves) or one PLC and one HMI (that is, one slave and one master).

Note This document assumes that the HMI and PLC are pre-programmed and the Digi One IAP's Ethernet interface is configured. If you require additional assistance in configuring the Digi One IAP, visit the Digi One IAP support page.

1.1 Example application

For this example, assume that your system has a serial master and single-port slave (such as a local HMI and low-end PLC). The Digi One IAP allows you to retrofit this so that the serial master can share this slave with the world. Application note 90000636 covers the basics of setting up the Digi One IAP with an HMI and PLC. This application note only covers the more complex steps required to enable RSLinx to see two devices on one Digi One IAP.
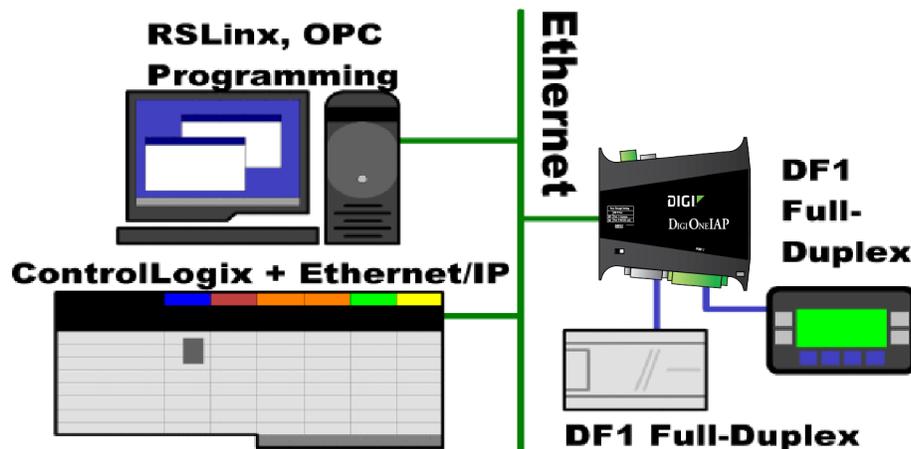
1.2 Theory of operations

RSLinx presumes that products not known to be bridges (that is, non-Rockwell products) will have only one device per IP address. The Digi One IAP compensates by assigning two IP addresses to each Digi One IAP. The second IP must be set manually and cannot be served by BOOTP or DHCP.

This application example is tested with RSLinx 2.41. It may work with other versions, but this has not been tested. ControlLogix and other Rockwell PLC will also see the Digi One IAP as two destinations with two IPs.

2 Setup per application note 90000636

If you rarely need to access one of the devices, use the following method to manually toggle between two attached DF1 devices.

2.1 Setup per application note 90000636

Setting up the Digi One IAP per Application note 90000636 gives you access to the PLC addressed as DST=1. The simplest way to access the other device is to edit the RSLinx Ethernet Device driver to change station number.

In this example, the old entry (**Station**=1) was deleted. The **Add New** button was pressed until the cursor was in the **Station**=10 row. Entering the Digi One IAP's IP here causes RSLinx to tag the AB/Ethernet header as being for DH+ station 10. The Digi One IAP now routes all the RSLinx requests via the Destination table to the HMI and not the PLC.
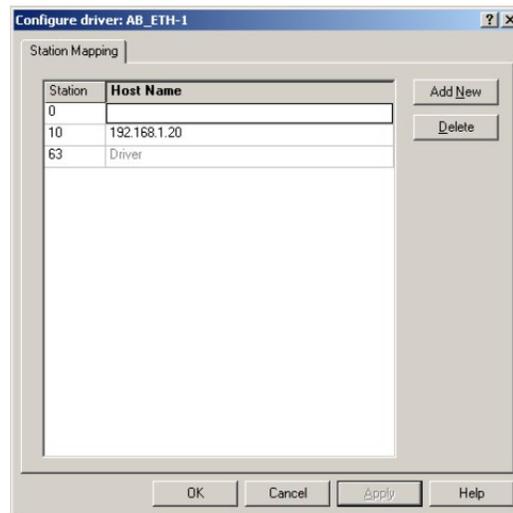
⚠️ **Caution** Do not use the same IP address for two table entries, as RSLinx will behave unpredictably. Only one will be accessed, but which one is unpredictable.

3 Two-IP solution

If you routinely need to access both serial devices from RSLinx, give the Digi One IAP a second IP address to make it appear as if it has two nodes. This solution is more advanced and presumes you are familiar with IP addresses, ping, telnet, and arp.

⚠️ **Caution** Giving one device two or more IP addresses can be confusing for other people. Be aware that using Digi's Alt-IP feature can create the illusion of phantom devices, claiming IPs that no one can remember setting. This is one reason that doing a reset to factory default is a good idea when reusing units.

3.1 Setting the Digi One IAP with a second IP

1. Telnet into the Digi One IAP with HyperTerminal or a telnet program.

2. Use the Digi One IAP's IP and network port 23.

3. Log in as root (default password is **dbps**).

4. Enter this command substituting your second IP address:

```
set altip ip=192.168.1.69 group=1
```

3.2 Test the Digi One IAP altip setting

1. Open a command prompt (or MS-DOS window) and **ping** the two IP addresses.

2. Run the **arp –a** command to see your active IP-to-MAC address mappings.

Note below that the two IP addresses (192.168.1.62 and 192.168.1.69) correctly share the same Ethernet hardware MAC addresses, C:\>ping 192.168.1.62.

```
Pinging 192.168.1.62 with 32 bytes of data:
Reply from 192.168.1.62: bytes=32 time<10ms TTL=64
Reply from 192.168.1.62: bytes=32 time<10ms TTL=64
Reply from 192.168.1.62: bytes=32 time<10ms TTL=64
Reply from 192.168.1.62: bytes=32 time<10ms TTL=64

Ping statistics for 192.168.1.62:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
C:\>ping 192.168.1.69

Pinging 192.168.1.69 with 32 bytes of data:
Reply from 192.168.1.69: bytes=32 time=10ms TTL=64
Reply from 192.168.1.69: bytes=32 time<10ms TTL=64
Reply from 192.168.1.69: bytes=32 time<10ms TTL=64
Reply from 192.168.1.69: bytes=32 time=10ms TTL=64

Ping statistics for 192.168.1.69:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
C:\>arp -a
Interface: 192.168.1.214 on Interface 0x1000003
 Internet Address    Physical Address    Type
 192.168.1.1         00-0f-66-0a-04-ca   dynamic
 192.168.1.62        00-40-9d-24-10-2e   dynamic
 192.168.1.69        00-40-9d-24-10-2e   dynamic
 192.168.1.98        00-a0-cc-74-02-41   dynamic
```

You still need to telnet or web browse to the main IP for configuration. However, RSLinx is able to access either or both IPs freely.

3.3 Digi One IAP IA configuration

Configure the Digi One IAP to function as a Rockwell bridge (see application guide 90000636 if you need help). But the final screen of the Industrial Automation Wizard may look something like the screen below. Note that the DF1 device on serial port 1 is defined as DST=1 and the DF1 device on serial port 2 is defined as DST=2.
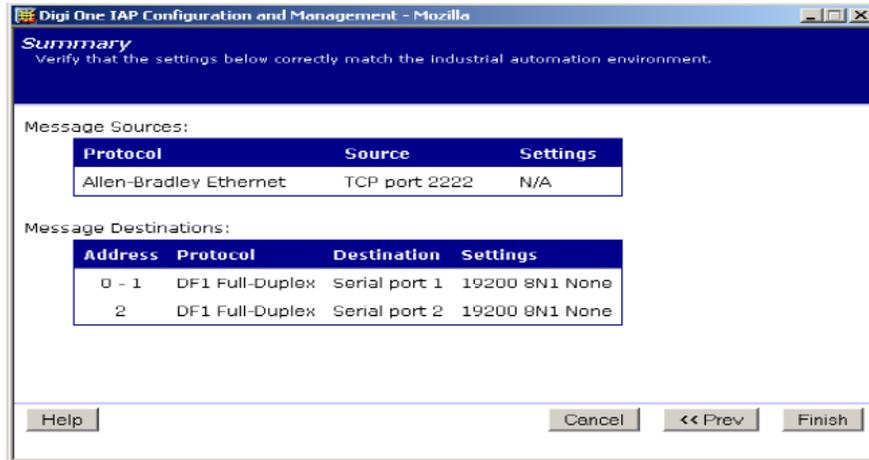
These devices could just as easily be set as DST=17 and DST=54. The points to remember are that:

- Any peer-to-peer DF1 messages use these values as the node address.

- RSLinx is configured with the correct Station number (see next section).

3.4 RSLinx 2.41 setup

When you set up RSLinx, select the **Ethernet Devices** communication drive, *not* the **Ethernet/IP** driver.

When you set up the table, you see the dialog shown at the right. Note the **Station** column. This is an important field. RSLinx I uses this as the DH+ destination node address within the AB/Ethernet (CSP) packet header. The Digi One IAP uses this as if it were the DF1 DST byte.

Messages will follow the **Destination** table settings per this value. In the application guide example, we have two PLCs set up as slave address one and two. RSLinx will now think PLC **Station 1** is at IP address 192.168.1.62 and PLC **Station 2** is at IP address 192.168.1.69.

3.5 RSWho results

We set up a Digi One IAP with a MicroLogix 1000 on port 1 (the screw terminals) and a MicroLogix 1200 on port 2. The Digi One IAP's main IP address is 192.168.1.62, and its alternative IP address is 192.168.1.69. These two IP addresses are entered into the driver configuration as **Station 1** and **Station 2**.

This is what you see when RSLinx auto-browses this setup: